A.2.10 SWMU 18

Description

SWMU 18 was identified based on the indicated presence of TEL burials on the Refinery Leaded Burial Map. SWMU 18 consists of a suspected 20-foot by 20-foot TEL sludge burial located in the western portion of Tank Basin 301 in the North Field.

As shown on Figure A.2.8 and summarized on Table A.2.8, data from 12 soil borings, 19 soil samples, one monitoring well groundwater sample, and one hydropunch sample have been used to characterize this SWMU. Data from other investigations are also included on Table A.2.8 for delineation purposes. Four borings (SB0037, U018002, U018003 and U018005) were installed during the 1st-Phase Soils Investigation, and one sample from boring SB0037 was analyzed for Skinner's List VOCs and SVOCs, lead and TEL to provide data for source characterization of SWMU 18. Additionally, four borings (S0764, S0765, S0766 and S0767) were installed during the Full RFI. Samples from these borings were analyzed for TCL VOCs and SVOCs, lead and TOL to further evaluate the location and extent of this potential leaded burial site. Two samples were analyzed for SPLP lead. Three additional borings (S1014, S1015 and S1016) were installed during the second iteration of the Full RFI to further delineate this SWMU. Samples from these borings were analyzed for BTEX, phenols, lead and TOL.

Soils

The following table summarizes the number of samples where soil delineation criteria were exceeded within SWMU 18:

Constituents of Concern	Surface Soils (0 to 2 ft) (7 Samples)	Fill Material (>2 ft) (8 Samples)	Native Soils (5 Samples)	Totals (19 Samples)
Benzene	6/7	7/8	1/5	14/20
Other VOCs	4/7	6/8	1/5	11/20
Benzo(a)pyrene	0/4	0/5	0/5	0/14
Other SVOCs	0/6	2/7	1/5	3/18
Lead	0/7	4/8	0/5	4/20
TOL/TEL	3/7	7/7	0/5	10/19

Surface Soils (0 to 2 feet bgs)

Evidence of staining and odor were observed in the zero to two foot bgs interval in several of the borings at SWMU 18. The maximum PID readings (506 and 6,521 ppm) at two of the 11 borings occurred within the surface soil interval. Each of the seven surface soil samples contained exceedances of at least one COC above the soil delineation criteria. Benzene was present above the soil delineation criterion in six of those samples, and TOL was present in three of those samples.

Fill Materials (>2 feet bgs)

The fill layer ranges in thickness from three to 12 feet at SWMU 18. Evidence of staining and odor were present in samples collected throughout the fill layer within this SWMU. In eight of the 11 borings installed in this SWMU, the highest recorded PID readings (ranging from 27 to greater than 9,999 ppm) at each boring occurred within the two to four foot bgs interval. One of these eight borings (S0765) had a maximum reading of greater than 9,999 ppm at multiple intervals. In addition, catalyst beads, black fly ash and/or evidence of petroleum impacts were observed in many of the borings. All seven of the samples collected from the fill layer within SWMU 18 contained TEL above the applicable soil delineation criterion. Seven of the eight samples contained benzene and/or at least one other VOC above applicable soil delineation criteria.

Native Material

The fill material is underlain by a peat/clay layer at a depth of approximately three to 12 feet bgs. Only one of the five samples (S0765C3) collected from native soils at this SWMU contained exceedances of the soil delineation criteria. Although this sample was collected in the clay and peat layer at a depth of 5 to 5.5 ft bgs, it should be noted that this interval contained evidence of staining, odors and residual product. Benzene (15.3 mg/kg), xylene (322 mg/kg) and 2,4-dimethylphenol (28.3 mg/kg) were detected above the applicable soil delineation criteria in this sample (S0765C3). However, the deeper soil sample from this same boring (S0765I4) had no exceedances of COCs. The other three samples contained no exceedances of the soil delineation criteria. Therefore, vertical delineation of SWMU 18 is complete.

As discussed further in Section 6 of the RFI Report, lateral delineation of selected COCs has been completed on a site-wide basis for each Yard. The delineation of these COCs is depicted graphically on the figures provided in Section 6.

Groundwater

Benzene (1,900 µg/L), methyl-tert-butyl ether (240 µg/L), multiple phenol compounds and arsenic (9.2 µg/L) have been detected above the applicable groundwater delineation criteria in a recent groundwater sample from monitoring well MW-117. The 1997 hydropunch sample collected from SWMU 18 also contained benzene (1,800 µg/L) and several other COCs above the applicable groundwater criteria, as did the two hydropunch samples installed during the Phase II OWSS Investigation in 1999. A more detailed discussion of potential groundwater impacts in the vicinity of SWMU 18 can be found in Section 8 of the RFI Report.

Summary

Several COCs, including BTEX, phenols (SVOCs), lead and TOL have been detected above the soil delineation criteria in a number of soil samples collected from this SWMU. Based on that data, the surface soil and fill layer, and the uppermost portion of the

underlying native soil layer within SWMU 18 have been impacted. These constituents, especially lead and TOL/TEL, are consistent with those expected to be associated with the burial of gasoline tank bottom materials. In addition, the depth at which these constituents were detected in soils (two to four feet bgs) is consistent with waste management practices believed to have been conducted in this area. SWMU 18 is a confirmed TEL burial site, and will be included for further evaluation in the CMS.

With regard to groundwater, this TEL burial area is located in a portion of the Refinery that has been impacted by petroleum releases, and it is not clear whether the COCs detected in groundwater can be attributed solely to this TEL burial, especially because lead was not detected above the groundwater delineation criterion in the 2002 monitoring well sample. Nonetheless, multiple COCs have been detected in the groundwater above the applicable groundwater delineation criteria at SWMU 18; therefore groundwater in the vicinity of SWMU 18 will be further evaluated in the CMS.